

## CLAIMS

1. A method for multi-reading a plurality of IDs, wherein an interrogator and multiple transponders repeat queries and responses there-between in order that the interrogator discriminates unique ID given to each one of the transponders; and  
 5        wherein said interrogator when querying specifies a read range of IDs and permits a response from only the transponders whose IDs are within said read range.
2. The method for multi-reading a plurality of IDs as described in claim 1, wherein said transponders when responding return their IDs, comprising the steps of:
  - 10        1) when there is a plurality of responses to the query of said interrogator, reducing the size of said read range by half in the subsequent query;
  - 2) when there is a single response to the query of said interrogator, reading out ID of the transponder which responded as well as shifting said read range to the following rank in the subsequent query; and further when there is a single response or no response to the previous query, expanding the size of said read range d twice; and  
 15        3) when there is no response to the query of said interrogator, shifting said read range to the following rank in the subsequent query; and further when there is a single response or no response to the previous query, expanding the size of said read range d twice;
  - whereby the above mentioned steps are repeated until searching of all the read ranges in which IDs to be read may exist is completed.
3. The method for multi-reading a plurality of IDs as described in claim 1, wherein said transponders when responding returns only response signals, comprising the steps of:
  - 20        1) when there is a response/responses from said transponders to the query of said interrogator, and
  - 1.1) when the size of said read range d is not equal to 1, reducing the size of said read range d by half in the subsequent query;
  - 1.2) when the size of said read range d is equal to 1, reading out ID of the transponder which responded as well as shifting said read range to the following rank in the subsequent query; and further when there is a response/responses to the previous query and the size of said read range d is equal to 1 or when there is no response, expanding the size of said read range d twice; and  
 30        2) when there is no response from said transponders to the query of said interrogator, shifting said read range to the following rank in the subsequent query; and further when there is a response/responses to the previous query and the size of said read range d is equal to 1 or when there is no response, expanding the size of said read range d twice;

whereby the above mentioned steps are repeated until searching of all the read ranges in which IDs to be read may exist is completed.

4. The method for multi-reading a plurality of IDs as described in claims 2 and 3, wherein the size of said read range  $d$  is defined by  $2^e$ , i.e. the power of 2, and said read range  $d$  is specified by an integer value of either the start  $S$  or the end  $E$  of said read range  $d$  and exponent  $e$  of said read range  $d$ .
5. The method for multi-reading a plurality of IDs as described in claim 4, wherein the reduction value ( $d/2$ ) of the size of said read range  $d$  is calculated by exponential function,  $e=e-1$ .
- 10 6. The method for multi-reading a plurality of IDs as described in claim 4, wherein the expansion value ( $2 \times d$ ) of the size of said read range  $d$  is calculated by exponential function,  $e=e+1$ .
7. The method for multi-reading a plurality of IDs as described in claim 4, wherein the end  $E$  of said read range is calculated by formula  $E=S+2^e-1$  when said read range is specified by the start  $S$  of said read range and the exponent  $e$ .
- 15 8. The method for multi-reading a plurality of IDs as described in claim 4, wherein the start  $S$  of said read range is calculated by formula  $S=E-2^e+1$ , when said read range is specified by the end  $E$  of said read range and the exponent  $e$ .